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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/693,845	10/20/2003	Karen S. Lyons	84632-US1	2813

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EXAMINER

DOVE, TRACY MAE

ART UNIT	PAPER NUMBER
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1795

MAIL DATE	DELIVERY MODE
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10/09/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/693,845	Applicant(s) LYONS ET AL.	
	Examiner Tracy Dove	Art Unit 1745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 January 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 January 2007 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

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DETAILED ACTION

This Office Action is in response to the communication filed on 1/5/07. Applicant's arguments have been considered, but are not persuasive. Claims 1-18 are pending. This Action is NON-FINAL.

Decision on Petition Under 37 CFR 1.181

Applicant filed a petition to withdraw finality of the office action mailed 3/23/07. The petition for withdrawal of finality was granted on 8/31/07. Thus, the finality of the action mailed 3/23/07 is withdrawn. The rejections contained in the improper final are repeated below and the action is being re-mailed as a Non-Final Office Action.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 2, 4, 10-12, 17 and 18 are rejected under 35 U.S.C. 102(b) as being anticipated by Watanabe et al., Preparation of Dispersed Platinum on Conductive Tin Oxide and Its catalytic Activity for Oxygen Reduction, J. Electrochem. Soc., 130(1), 1/1983.

Watanabe teaches a Pt-SnO₂ catalyst material (page 63). The SnO₂ is subjected to an alkaline pretreatment that cause the pH response of the electrode to be enhanced through hydration (yH₂O). The pretreatment enhances the chemisorption on SnO₂. The adsorption occurs on SnO₂ only on surfaces which have been hydrated (col. 1, page 60). The platinum is

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highly dispersed on tin oxide through chemisorption. The Pt-SnO₂ catalyst material is used for an electrode for catalyzing oxygen reduction in alkaline solution (abstract).

Thus the claims are anticipated.

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Claims 1, 2, 4, 5, 12, 13, 15 and 17 are rejected under 35 U.S.C. 102(b) as being anticipated by Gardner et al., Characterization Study of Silica-Supported Platinized Tin Oxide Catalysts Used for Low-Temperature CO Oxidation: Effect of Pretreatment Temperature, J. Phys. Chem. 1991, 95:2.

Gardner teaches Pt/SnO₂ surfaces supported on SiO₂. The SnO₂ may be partially reduced to SnO (abstract). Pt/SnO₂ is humidified and a silica support improves the performance of Pt-SnO₂ surfaces by preventing extensive surface dehydration and consequent activity loss (page 835). Thus the claims are anticipated.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 2 and 4-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Watanabe et al., US 5,922,487 ("Watanabe 487") in view of Watanabe et al., Preparation of Dispersed Platinum on Conductive Tin Oxide and Its catalytic Activity for Oxygen Reduction, J. Electrochem. Soc., 130(1), 1/1983.

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Watanabe 487 teaches an electrode catalyst for a fuel cell comprising an alloy essentially consisting of at least one of tin, germanium and molybdenum, and one or more noble metals selected from platinum, palladium and ruthenium (abstract). The electrocatalyst alloy essentially consists of 1-60 atomic % of tin and the balance of one or more noble metals (Pt) (2:50-52). The catalyst comprises a support such as carbon black and platinum is supported thereon. The platinum is coated with tin hydroxide which is converted to tin oxide (3:48-60). Example 5 teaches a fuel cell comprising an electrode comprising the Pt/Sn carbon supported catalyst, a cathode and a perfluorocarbon ion exchange membrane. The platinum carbon catalyst is 30 wt% platinum and 70 wt% carbon support.

Watanabe does not explicitly teach a $\text{Pt-SnO}_x\text{H}_2\text{O}$ catalyst material.

However, Watanabe teaches a Pt-SnO_2 catalyst material (page 63). The SnO_2 is subjected to an alkaline pretreatment that cause the pH response of the electrode to be enhanced through hydration (yH_2O). The pretreatment enhances the chemisorption on SnO_2 . The adsorption occurs on SnO_2 only on surfaces which have been hydrated (col. 1, page 60). The platinum is highly dispersed on tin oxide through chemisorption. The Pt-SnO_2 catalyst material is used for an electrode for catalyzing oxygen reduction in alkaline solution (abstract).

Therefore, the invention as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made because Watanabe teaches the Pt-SnO_2 (hydrated) system may be used as a replacement for platinum metal as a catalyst. One of skill would have been motivated to use the Pt-SnO_2 (hydrated) catalyst of Watanabe to replace the platinum catalyst material of Watanabe 487 because Watanabe clearly suggests as much.

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Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Watanabe et al., Preparation of Dispersed Platinum on Conductive Tin Oxide and Its catalytic Activity for Oxygen Reduction, J. Electrochem. Soc., 130(1), 1/1983 in view of Katayama, Electrooxidation of Methanol on a Platinum-Tin Oxide Catalyst, J. Phys. Chem, 1980, 84:4.

Watanabe teaches a Pt-SnO₂ catalyst material (page 63). The SnO₂ is subjected to an alkaline pretreatment that cause the pH response of the electrode to be enhanced through hydration (yH₂O). The pretreatment enhances the chemisorption on SnO₂. The adsorption occurs on SnO₂ only on surfaces which have been hydrated (col. 1, page 60). The platinum is highly dispersed on tin oxide through chemisorption. The Pt-SnO₂ catalyst material is used for an electrode for catalyzing oxygen reduction in alkaline solution (abstract).

Watanabe does not explicitly state the amount of platinum. However, Katayama teaches a platinum-tin oxide catalyst (abstract). The Pt/SnO₂ catalyst may be up to 16 atom% platinum (page 378). Therefore, the invention as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made because one of skill would have been motivated to use a conventional amount of platinum for the Pt-SnO₂ catalyst material of Watanabe.

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Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Gardner et al., Characterization Study of Silica-Supported Platinized Tin Oxide Catalysts Used for Low-Temperature CO Oxidation: Effect of Pretreatment Temperature, J. Phys. Chem. 1991, 95:2 in view of Katayama, Electrooxidation of Methanol on a Platinum-Tin Oxide Catalyst, J. Phys. Chem, 1980, 84:4.

Gardner teaches Pt/SnO₂ surfaces supported on SiO₂. The SnO₂ may be partially reduced to SnO (abstract). Pt/SnO₂ is humidified and a silica support improves the performance of Pt-SnO₂ surfaces by preventing extensive surface dehydration and consequent activity loss (page 835). Gardner does not explicitly state the amount of platinum. However, Katayama teaches a platinum-tin oxide catalyst (abstract). The Pt/SnO₂ catalyst may be up to 16 atom% platinum (page 378). Therefore, the invention as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made because one of skill would have been motivated to use a conventional amount of platinum for the Pt-SnO₂ catalyst material of Gardner.

Response to Arguments

Applicant's arguments filed 1/5/07 have been fully considered but they are not persuasive.

Applicant argues Watanabe does not disclose the composition comprises a hydrate, as required by the claimed invention. However, Watanabe teaches the tin oxide is subjected to hydration. Hawley's Chemical Dictionary defines hydration as the reaction of molecules of water with a substance in which the H-OH bond of water is not split. The products of hydration are called hydrates. In formulas of hydrates, the addition of the water molecules is conventionally indicated by a centered dot (page 611). Thus one of skill would have concluded the tin oxide subjected to hydration in Watanabe could have been written as SnO_x·yH₂O because by definition the hydration of tin oxide results in a hydrate compound.

Applicant argues Gardner does not disclose the hydrate compound of the claimed invention because dehydration of the compound of Gardner does not imply that the material had been a hydrate. Examiner disagrees. Hawley's Chemical Dictionary discloses dehydration is the

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removal of one or more molecules of water from a chemical compound. Hawley's discloses the term dehydration is not applied to the loss of water by evaporation or sun-drying (pages 349-350). Therefore, one of skill would have concluded that the compound of Gardner was necessarily a hydrate.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tracy Dove whose telephone number is 571-272-1285. The examiner can normally be reached on Monday-Thursday (9:00-7:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Pat Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

October 1, 2007


TRACY DOVE
PRIMARY EXAMINER